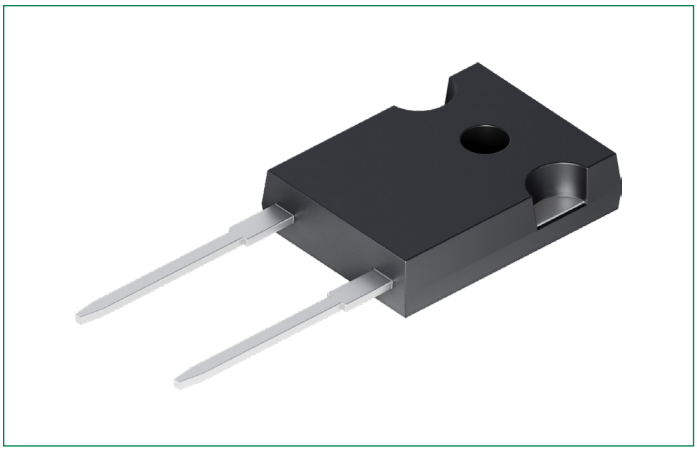
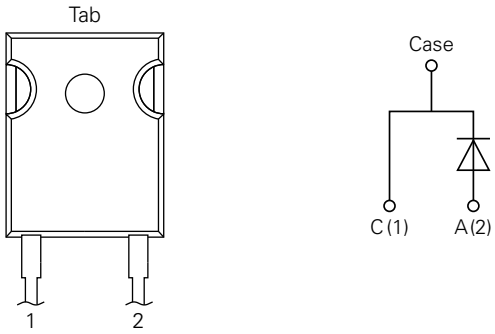
DCK30I1200HA

1200 V, 30 A SiC Schottky Diode

RoHS HF



Pinout Diagram TO-247-2L



1: Cathode; **2:** Anode; **Tab:** Case

Features

- Max junction temperature of 175 °C
- High surge current capacity
- Extremely fast reverse recovery time
- High-frequency operation
- Temperature independent switching behavior
- Positive temperature coefficient on V_F

Applications

- Solar power boost
- Inverter free wheeling diodes
- Vienna 3-Phase PFC
- Switching mode power supplies

Product Summary

Characteristic	Value	Unit
V_{RRM}	1200	V
I_F (T_c = 148 °C)	30	A
Q_c	153	nC

© 2025 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: XZ 01/13/2025

Maximum Ratings (T_c = 25 °C unless otherwise specified)

Symbol	Characteristic	Conditions		Value	Unit
V_{RRM}	Repetitive peak reverse voltage	–		1200	V
V_{DC}	DC blocking voltage	–		1200	V
I_F	Continuous forward current	–	T_c = 25 °C	80.6	A
			T_c = 135 °C	38.8	
			T_c = 148 °C	30	
I_{FSM}	Non-repetitive surge forward current	Sine halfwave @ T_c = 25 °C, t_p = 10 ms		210	A
I_{FRM}	Repetitive peak forward current	Frequency = 0.1 Hz, 100 cycles sine halfwave @ T_c = 25 °C, t_p = 10 ms		180	A
P_{tot}	Total power dissipation	–	T_c = 25 °C	375	W
			T_c = 150 °C	62.5	
I^2t	I^2t	T_c = 25 °C, t_p = 10 ms		220	A^2s
T_{vj}	Virtual junction temperature range	–		–55 to 175	°C
T_{stg}	Storage temperature range	–		–55 to 175	°C
M	Mounting torque	M3 screw		0.7	Nm

Note: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Thermal Characteristics

Symbol	Characteristic	Value			Unit
		Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal resistance, junction to case Fig.7	–	0.40	–	K/W

Electrical Characteristics (T_{vj} = 25 °C unless otherwise specified)

Symbol	Characteristic	Conditions		Value			Unit
				Min.	Typ.	Max.	
V_F	Forward voltage Fig.1	I_F = 30 A	T_{vj} = 25 °C	–	1.48	1.80	V
			T_{vj} = 175 °C	–	2.20	3.00	
I_R	Reverse current Fig.2	V_R = 1200 V	T_{vj} = 25 °C	–	10	200	µA
			T_{vj} = 175 °C	–	60	1000	
C	Total capacitance Fig.3	V_R = 1 V, f = 1 MHz		–	1640	–	pF
		V_R = 400 V, f = 1 MHz		–	145	–	
		V_R = 800 V, f = 1 MHz		–	107	–	
Q_c	Total capacitive charge Fig.4	V_R = 800 V, T_{vj} = 25 °C, $Q_c = \int_0^{VR} C(V)dV$		–	153	–	nC
E_c	Capacitance stored energy Fig.5	V_R = 800 V, T_{vj} = 25 °C, $E_c = \int_0^{VR} C(V) \cdot VdV$		–	43.8	–	µJ

© 2025 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: XZ 01/13/2025

Characteristic Curves

Fig. 1. Typical Forward Characteristics

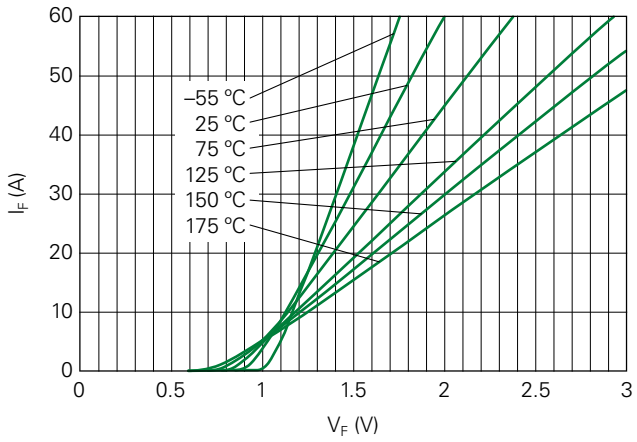


Fig. 2. Typical Reverse Characteristics

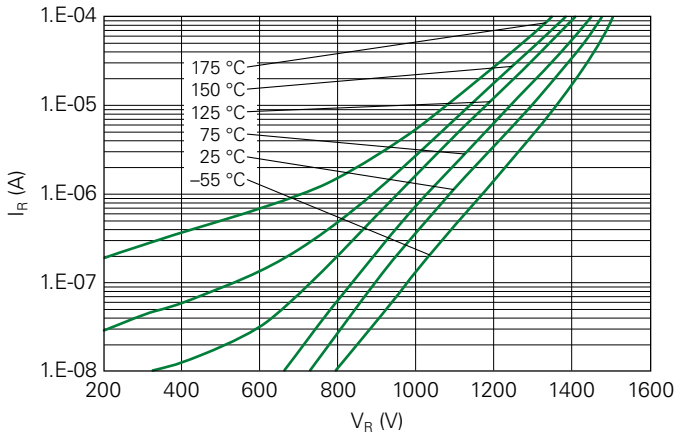


Fig. 3. Capacitance vs. Reverse Voltage

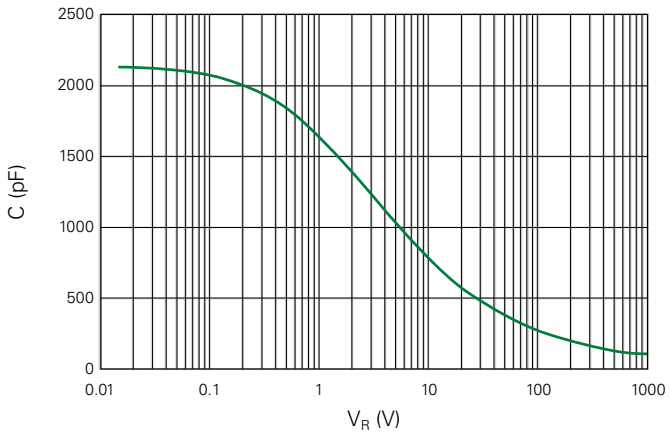


Fig. 4. Total Capacitive Charge vs. Reverse Voltage

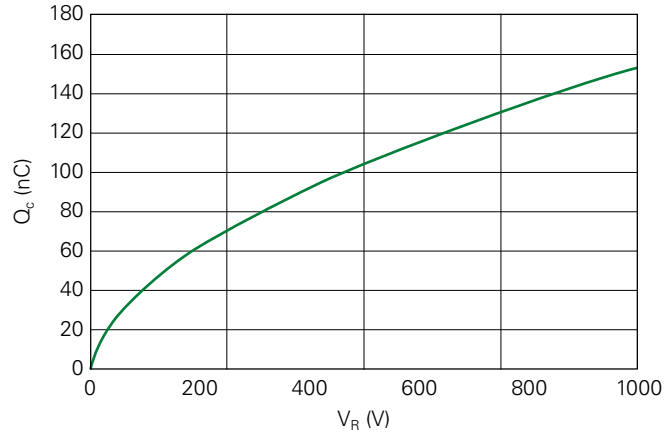


Fig. 5. Capacitance Stored Energy

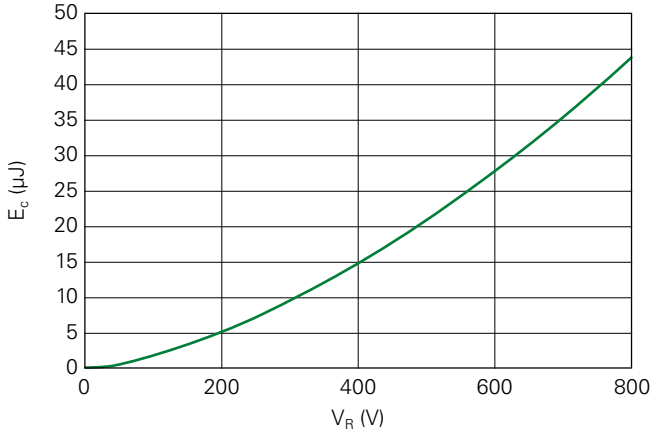
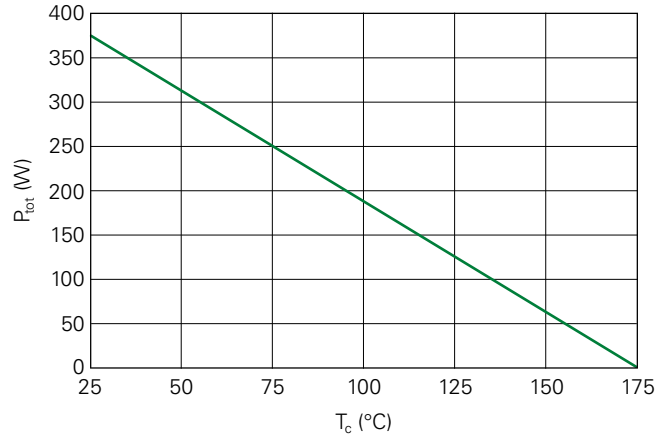


Fig. 6. Power Derating



© 2025 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: XZ 01/13/2025

Fig. 7. Transient Thermal Impedance

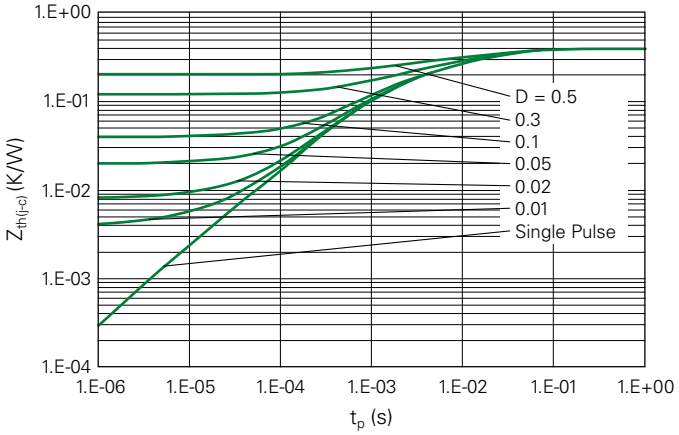
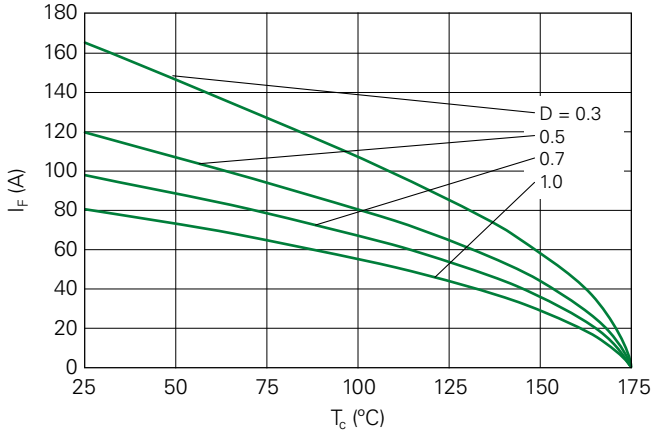
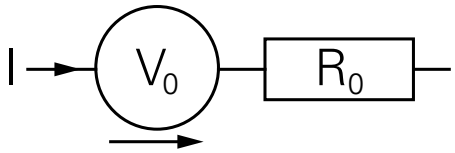


Fig. 8. Forward Current vs. Case Temperature



Diode V_F Model for Simulation



$V_F(T_j) = V_0 + IR_0$

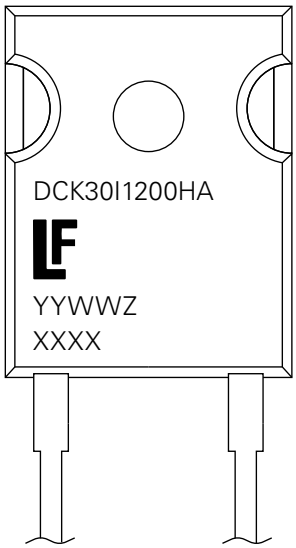
$V_0 = 1 \times 10^{-7} \cdot T_j^2 - 0.0013 \cdot T_j + 0.9879$

$R_0 = 5 \times 10^{-7} \cdot T_j^2 + 9 \times 10^{-5} \cdot T_j + 0.0151$

Notes

- T_j is the junction temperature in °C
- Range valid from 25 °C to 175 °C
- Model represents performance of a typical chart

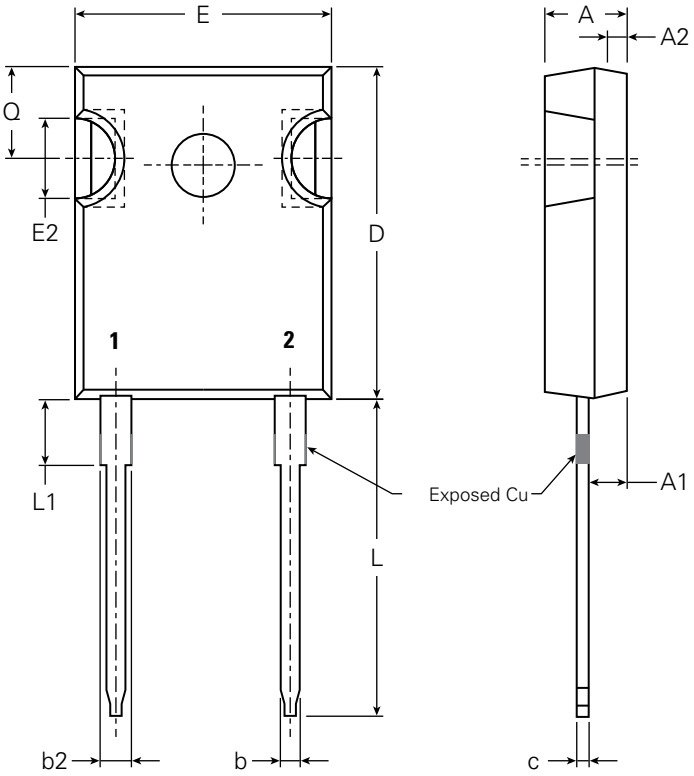
Part Number and Marking

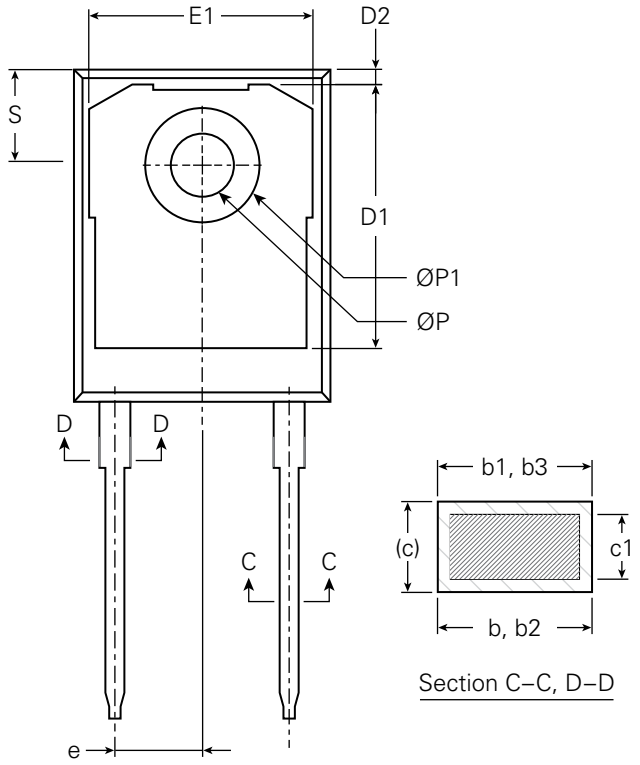


DCK30I1200HA = Part Material Number
YY = Year
WW = Work Week
Z = Assembly Location
XXXX = Lot Traceability

© 2025 Littelfuse, Inc.
Specifications are subject to change without notice.

Part Outline Drawing TO-247-2L





Section C–C, D–D

Symbol	Inches			Millimeters		
	Min.	Typical	Max.	Min.	Typical	Max
A	0.190	–	0.205	4.83	–	5.21
A1	0.087	–	0.102	2.20	–	2.60
A2	0.059	–	0.098	1.50	–	2.49
b	0.039	–	0.055	1.00	–	1.40
b1	0.039	–	0.053	0.99	–	1.35
b2	0.071	–	0.095	1.80	–	2.41
b3	0.065	–	0.094	1.65	–	2.39
c	0.020	–	0.028	0.50	–	0.70
c1	0.015	–	0.028	0.38	–	0.70
D	0.799	–	0.831	20.30	–	21.10
D1	0.515	–	–	13.08	–	–
D2	0.020	–	0.053	0.51	–	1.35
E	0.608	–	0.635	15.45	–	16.13
E1	0.516	–	–	13.10	–	–
E2	0.145	–	0.216	3.68	–	5.49
e	0.214 BSC			5.44 BSC		
L	0.780	–	0.827	19.80	–	21.00
L1	–	–	0.177	–	–	4.50
ØP	0.138	–	0.146	3.50	–	3.70
ØP1	–	–	0.291	–	–	7.40
Q	0.212	–	0.244	5.39	–	6.20
S	0.238	–	0.248	6.04	–	6.30

Note:
1. Package Reference: JEDEC TO247, Variation AD
2. Slot required, notch may be rounded or rectangular
3. Dimension D&E do not include mold flash
4. Subject to change without notice

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications.
Read complete Disclaimer Notice at http://www.littelfuse.com/disclaimer-electronics.

IXYS Part of: Littelfuse
Expertise Applied | Answers Delivered

© 2025 Littelfuse, Inc.
Specifications are subject to change without notice.